

Award Number: W81XWH-11-2-0100

TITLE: The Temporal Relationship Between Intrafamilial Violence, Deployment, and Serious Mental Illness in US Army Service Members

PRINCIPAL INVESTIGATOR:  
David Rubin, MD, MSCE

CONTRACTING ORGANIZATION:  
The Children's Hospital of Philadelphia  
Philadelphia, PA 19104

REPORT DATE: March 2013

TYPE OF REPORT: Annual Report

PREPARED FOR: U.S. Army Medical Research and Materiel Command  
Fort Detrick, Maryland 21702-5012

DISTRIBUTION STATEMENT: Approved for Public Release;  
Distribution Unlimited

The views, opinions and/or findings contained in this report are those of the author(s) and should not be construed as an official Department of the Army position, policy or decision unless so designated by other documentation.

REPORT DOCUMENTATION PAGE				Form Approved OMB No. 0704-0188	
Public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing this collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden to Department of Defense, Washington Headquarters Services, Directorate for Information Operations and Reports (0704-0188), 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to any penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number. <b>PLEASE DO NOT RETURN YOUR FORM TO THE ABOVE ADDRESS.</b>					
1. REPORT DATE March 2013		2. REPORT TYPE Annual		3. DATES COVERED 18 February 2012 -17 February 2013	
4. TITLE AND SUBTITLE The Temporal Relationship Between Intrafamilial Violence, Deployment, and Serious Mental Illness in US Army Service Members				5a. CONTRACT NUMBER	
				5b. GRANT NUMBER W81XWH-11-2-0100	
				5c. PROGRAM ELEMENT NUMBER	
6. AUTHOR(S) David Rubin, MD MSCE; MAJ Sarah Frioux, MD; Sam Whipple, MSPH; Christine Taylor  E-Mail: Rubin@email.chop.edu				5d. PROJECT NUMBER	
				5e. TASK NUMBER	
				5f. WORK UNIT NUMBER	
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) Children's Hospital of Philadelphia Philadelphia, PA 19104-4318				8. PERFORMING ORGANIZATION REPORT NUMBER	
9. SPONSORING / MONITORING AGENCY NAME(S) AND ADDRESS(ES) U.S. Army Medical Research and Materiel Command Fort Detrick, Maryland 21702-5012				10. SPONSOR/MONITOR'S ACRONYM(S)	
				11. SPONSOR/MONITOR'S REPORT NUMBER(S)	
12. DISTRIBUTION / AVAILABILITY STATEMENT Approved for Public Release; Distribution Unlimited					
13. SUPPLEMENTARY NOTES					
14. ABSTRACT Prior research has established an association between deployment and family violence, with insufficient evidence to identify when such violence occurs in relation to deployment and identification of mental illness in ADSM. This project will use: 1) longitudinal models to capture the temporal relationships between deployment, mental illness and family violence and 2) qualitative techniques to allow military stakeholders to evaluate Stage 1 findings and inform future interventions. This year we assembled our experts, obtained human subjects approvals, and acquired datasets. We now have our finalized cohort for our study period of interest. Our programmer is working intensively to clean the datasets so that we can link deployment/UIC/MOS records to substantiated reports of family abuse and medical claims data. Once this is done, we will move forward with formal data analyses and begin to answer our research questions. The last 3 months have been filled with progress and momentum, and we look forward to sharing results from our analyses in the upcoming months.					
15. SUBJECT TERMS Family Violence, Mental Illness, Health Services Research					
16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT  UU	18. NUMBER OF PAGES	19a. NAME OF RESPONSIBLE PERSON USAMRMC
a. REPORT U	b. ABSTRACT U	c. THIS PAGE U			19b. TELEPHONE NUMBER (include area code)

## **Table of Contents**

Section I: Introduction-----	3
Section II: Summary of progress-----	4
Personnel-----	4
Human Subject Approval-----	4-5
Key Partnerships-----	5
Security Standards-----	5
Data Acquisition-----	5-6
Data Preparation-----	6-7
Data Analysis-----	7-9
Section III: Problem Areas-----	9-10
Section IV: Upcoming Work-----	10-11
Section V: Administrative Comments-----	11
Appendix I: PTSD Definitions-----	12-13
Appendix II: Final Medications List-----	14-18
Appendix III: ICD-9 Codes-----	19-26
Quad Chart-----	27

## **SECTION I - A BRIEF INTRODUCTION COVERING THE PURPOSE AND SCOPE OF THE RESEARCH EFFORT.**

The last decade has been one of considerable stress to families of soldiers, who have sustained a 10-year combat effort involving prolonged, sequential deployments. The resulting deployment tempo has created unique stressors on military families. While evidence suggests that military families themselves are not at increased risk for intrafamilial violence during peacetime, (1) there is evidence that cycles of deployment may increase this risk. (2) This risk could be encumbered by the soldiers themselves, or by the spouse who is left behind to care for the family's needs. (3) While prior data has demonstrated a cross-sectional association between deployment and intrafamilial violence, there remains a great need to understand the temporal relationships, the specific personnel at greatest risk, and how such information can lead to better targeting of preventative resources.

This proposal offers a mixed methods approach to better appreciate the challenges faced by military families, as well as potential strategies that will support them and thereby reduce the risk for intrafamilial violence that may be associated with deployment. An observational analysis (Stage 1) will determine the temporal relationships between deployment, mental health issues, and intrafamilial violence within military families, and evaluate the risk differences between soldiers with different roles and responsibilities. To be clear, this proposal does not seek to identify whether there is an association between deployment and intrafamilial violence. Rather, we will further advance the military's understanding of this association by identifying the temporal relationships between deployment and intrafamilial violence as well as discovering how other factors mediate and moderate this relationship. With this analysis, we can identify specific subgroups of families that are at greatest risk for intrafamilial violence and the timeframe in which their risk is greatest. In this way, policies within the Army can help to target resources more effectively to families at highest risk, moving away from a "one-size fits all" approach.

For the observational analysis, we will link personnel and deployment history with healthcare claims data and substantiated reports of spousal and child abuse. The team will pursue longitudinal analyses to:

- 1) Establish the temporal relationship between deployment, diagnosis of mental illness in soldiers and spouses, and events of intrafamilial violence.
- 2) Identify specific factors that may modify the temporal relationship, including individual factors (i.e., demographics, soldiers' prior health, unit, MOS), family factors (i.e., family size, compositing, family members' prior health history), and deployment factors (i.e. length, frequency, timing between, and role during)

To build upon those results, the team will then pursue a community-driven approach via qualitative study (Stage 2) in which targeted leadership and stakeholders within the Army will be asked to reflect on the results from the observational study, based on expertise and past experiences within the system, to provide structured feedback that will guide suggestions for future interventions. This mixed methods format offers the best approach to linking quantitative analyses with concrete stakeholder recommendations in order to develop appropriate interventions that can be feasibly implemented. For the qualitative study, we will create a structured qualitative approach that will emerge from Stage 1 findings and, with guidance from

our Army advisors, which allows community experts/stakeholders from within the Army to:

- 1) Provide a rich contextual interpretation of the findings generated in Stage 1.
- 2) Solicit recommendations from Army stakeholders that will enhance the successful implementation of future interventions arising from Stage 1 findings.

## **SECTION II – SUMMARY OF PROGRESS DURING YEAR 2**

The past year has been very demanding and successful for our team—we have hired several new personnel, obtained data, and engaged partners. In particular, during the last quarter the arrival and cleaning of several key datasets allows us to embark on the data analysis phase. We anticipate that within 6 to 12 months we will have a significant amount of analyses conducted and look forward to sharing these results in the near future.

### Personnel

Over the course of the past year, we strengthened our study team by adding several new members.

- MAJ Frioux is currently deployed to Afghanistan, however we continue to incorporate her into our research process through the following ways: (1) we have established a successful, regular communication schedule with MAJ Frioux and the study team using Skype conference calls for our weekly meetings and have adjusted our meeting times to reflect the time difference; (2) we have established a reporting plan for the study team to keep MAJ Frioux briefed on any developments should she miss a scheduled meeting.
- The previous project manager, Amanda O'Reilly, resigned from CHOP on November 29, 2012. The study team hired a new project manager, Sam Whipple, who began work at CHOP on December 10, 2012. Mr. Whipple has a background in public health and experience in large dataset analysis.
- The team also hired a research assistant, Christine Taylor, to provide support for this project, and she began employment on May 25<sup>th</sup>, 2012.
- A demographer, Dr. Heather Griffis, was hired to contribute to the data analysis. She has a background in health and mortality research as well as analysis of large datasets.

### Human Subjects Approvals

Over the past year, our team has made a number of modifications to our protocol through Institutional Review Board (IRB) approved amendments. Changes are listed below:

- We submitted and received approval for an amendment to the CHOP IRB to include additional TRICARE data elements in the analysis recommended by PASBA. The team then submitted and received approval for a parallel amendment to the TMA privacy board. We also submitted and received approval from the CHOP IRB for the annual continuing review of the protocol. This amendment also included a protocol for transferring de-identified data to CHOP's secure Storage Area Network (SAN) for data analysis. This amendment was approved by the CHOP IRB on 5/1/2012.

- Addition of geographical data elements for DMDC data, including zip code, state, and country codes for soldier UIC records. This amendment was approved by the CHOP IRB on 9/14/2012
- Transferring data through the shipment of encrypted DVDs due to inability to transfer it via the Department of Defense's FTP network. This amendment was approved by the CHOP IRB on 9/19/2012.

### Key Partnerships

Over the past year, we have connected with a number of individuals whose expertise will add depth and understanding to our study. This includes Ms. Deloris Davis and Dr. Betty Maxfield from the Office of Army Demographics, who have added valuable input regarding data structure and elements. Dr. Maxfield advised us to split data into a quarterly format in order to better facilitate our goal of establishing a longitudinal structure. She also recommended using the Post-deployment Health Assessment (PDHA) and Post-deployment Health Reassessment (PDHRA) in order to validate our MOS classifications. Data from these assessments will overlap with our time period of interest from 2005 to 2007.

Additionally, Vicki Vestal and Jenny Butler from PASBA assisted our team as we prepared to document data elements requested from the PASBA database. They advised us on the proper elements to facilitate linkage across multiple datasets. These conversations led to the final IRB Modification before the data extract process began.

Our team has also been in contact with Dr. Larry Knauss of the Child, Adolescent and Family Behavioral Health Office at Joint Base Lewis-McCord. He helped guide the team to the right contacts at PASBA and will continue to be involved in analyzing and interpreting results from our study. His input will be extremely helpful once we enter Stage 2.

### Enhancing Our Security Standards

Following an internal review of our security standards and protocols, a number of recommendations were made to us from the CHOP IRB office. We have implemented a number of these changes and they are described in brief below:

1. Securing the standalone computer on which the raw data is housed with a security cable.
2. Establishing a change of custody log, which is updated whenever a transfer of data is involved between CHOP and one of our data providers.

We will continue to work towards assuring all of our security standards are up to date and in compliance with all DUAs.

### Data Acquisition

For this study we are acquiring datasets from 3 different sources. The progress of data acquisition from these sources is outlined below:

1. Defense Manpower Data Center (DMDC)--We have received our final deployment, UIC, MOS, and dependent datasets. Our cohort includes 418,011 soldiers and 1,147,583 of their

dependents (spouses and children). Our team has worked closely with Colin Rogers to receive this data and he has helped us work through multiple issues related to our cohort.

2. Patient Administration Systems and Biostatistics Activity (PASBA)--We received 6 out of our 11 TMA datasets from PASBA during the week of February 11, 2013. This included medical claims data from TED-I, TED-NI, SIDR, SADR, as well as the Master Death File and the Pharmacy Detail Transaction Service file. However, these files were missing a significant portion of our cohort, so we are continuing to work with Leon Kattengell of PASBA to resolve these issues. On 01/25/13, we received the updated files for these datasets, and expect to receive the remaining datasets in the next week.

3. Family Advocacy Program (FAP)--We received the requested data containing substantiated reports of child and spousal abuse within our cohort from Dr. Clayton Gable on February 20, 2013. This included 42,987 reports of substantiated child and spousal abuse, which is a plausible number of events given our cohort size and rates of military spousal and child abuse in recent years.

We are in the final stages of the data acquisition phase and look forward to analyzing this data in the coming weeks to begin to answer our research questions.

#### Data Preparation

Our study team continues to meet twice per week to work through data acquisition, management and analysis protocols. We also established a smaller weekly meeting dedicated exclusively to planning and assigning tasks related to data analysis.

#### **PTSD**

Our team of mental health experts developed an algorithm for identifying definitive, probable and possible cases of PTSD from the TRICARE medical claims (see attached). This is a critical issue for the study because Army regulation and clinical practice has changed significantly over the study period. Therefore, this algorithm takes into account the ICD-9 codes for PTSD, but also relies on other comorbid conditions as well as medications used to manage PTSD symptoms. This algorithm will act as a guide as we identify cases of PTSD in the data. Our definition for PTSD has been validated by Gerlinde Harb, PhD and MAJ Frioux from our team, as well as behavioral specialists within the U.S. Army. Our definition is stratified into 4 categories: PTSD diagnosis, very likely PTSD, likely posttraumatic stress, and possible posttraumatic symptomatology. We have also finalized our list of medications that we will use to guide our identification of PTSD cases. Please find PTSD definitions and medications list attached in Appendices I and II.

#### **Medical Claims (Childhood Injury, TBI, Comorbidities)**

In addition to PTSD, we constructed a comprehensive list of ICD-9 codes to identify childhood injury outcomes, traumatic brain injuries in soldiers and other comorbid mental health conditions within the family, all to be extracted from the medical claims. These can be found in Appendix III, along with codes for TBI and other war-related injuries. Our team also finalized a list of psychiatric medications used to treat not only PTSD, but also other mental health conditions included in this analysis (included in Appendix II).

### **Definition of Family**

We continue to work on our definition of a “family” and how to deal with events that may affect this definition over time, such as divorces, deaths, and changes of custody of dependents. We are working to create dyad tables to help us visualize the family units in a temporal context, which will allow for individuals to leave and enter the family over time.

### **Unit Stability**

Additionally, we have continued to develop our definition of unit stability, and how this may place a soldier at increased risk for different outcomes. We will stratify soldiers into 3 categories depending on the duration that they have been with their assigned unit prior to deployment (less than 3 months, 3-6 months, and more than 6 months). Our plan is to then look at how this influences mental health outcomes and events of family violence.

### **Data de-identification**

Currently, our data team is working to clean the DMDC data so that both soldiers and dependents can be de-identified, a study ID can be generated for each individual, and a crosswalk file can be created. Once this is done, we will link the DMDC data with both TMA and FAP data and move towards formal data analysis.

### Data Analysis

With the recent arrival of our datasets, the majority of our time is being spent on cleaning and preparing the data for analysis. However, we have provided some descriptive statistics from both DMDC and FAP below. Table 1 highlights some basic deployment and UIC statistics from our cohort, while Table 2 provides a breakdown of substantiated reports of abuse from FAP from 2000 to 2007. Although the number of reports during our time period for our cohort was 42,987, there were 46,275 cases of abuse for those reports, as a single report may include multiple abuse types. A visual breakdown of these numbers can be found in the quad chart attached to the end of this report.

**Table 1: Basic deployment statistics of our cohort, 2000-2007 (N=418,011)**

Soldiers with at least 1 deployment	297,443 (71.2% of total cohort)
Soldiers with more than 1 deployment	143,121 (48.1% of soldiers with 1+ deployment)
Average duration per deployment	277 days
Average duration of cumulative deployments	415 days
Number of unique Assigned UICs	29,895
Number of unique Duty UICs	48,138



**Table 2: Substantiated reports of abuse involving our cohort from FAP data, 2000-2007**

<b>Total Abuses<sup>1</sup></b>	46,275 (100%)
-Spousal	24,580
-Child	21,695
<b>Physical Abuse</b>	26,295 (56.8%)
-Spousal	21,041
-Child	5254
<b>Sexual Abuse</b>	1505 (3.3%)
-Spousal	163
-Child	1342
<b>Emotional Abuse</b>	6321 (13.7%)
-Spousal	3334
-Child	2987
<b>Neglect</b>	12,154 (26.3%)
-Spousal	42
-Child	12,112
<sup>1</sup> A single report may include multiple abuse types. Total number of reports from 2000-2007 was 42,987.	

During the next year, we will focus on the relationship between deployment and spouse and family member abuse while taking into account the soldiers MOS, unit, as well as the family characteristics.

#### Outcomes

We have data on substantiated claims of abuse and neglect, including physical, sexual, and emotional abuse of a spouse or child and neglect of a spouse or child (a) from the Family Advocacy Program, FAP, and (b) from TRICARE medical claims data in the form of encounters that are for problems consistent with injuries arising out of abuse or neglect. In addition, we will look at mental health diagnoses as an outcome, specifically post-traumatic stress disorder, among others.

#### Exposure variables

The main exposure will be deployment status. Soldiers will be classified at each point in time regarding their deployment status (not deployed, before, after, and during deployment). We will estimate the effect of deployment status on the rate or hazard of abuse events by including it in the proportional hazards models as a time-varying categorical variable.

#### The time unit of analysis – the month

To assess the associations of exposures and outcomes over time, we have had to adopt a unit for time measurement of sufficient granularity to preserve the temporal association of possible cause and possible effect (exposure and outcome). Although some of the data supplied are quarterly (MOS/UIC data from DMDC), we will continue to do all analyses by the service-member-month to allow for careful definitions of the timing of exposure and outcome.

#### Potential confounders

Our interest is in the relationship of deployment and outcomes. Potential confounders in this relationship we assume might be characteristics of the family or soldiers, if these characteristics are associated with deployment and outcome. These confounders might influence subsequent deployments more than they affect the initial deployments. Although we will search for these factors and test whether in fact they act as confounders, our working hypothesis is that these confounders will not be present, in that deployment is unrelated to these factors. .

#### Moderators (effect modifiers)

First, we have captured MOS information and learned that Duty MOS may vary within service member over time as well as across service members. Second, we have identified the unit to which service members attached, as well whether the service person was deployed with his or her unit. We have theorized that deployment apart from the usual unit will modify the effect of employment on outcome. We will consider as effect modifiers service members' age, gender, education, years of service, MOS, rank, their family characteristics (size of family, dependents ages, location of extended family), and the characteristics of the units (size, structure), and their deployment history and tempo.

#### Statistical modeling

For analysis, we are assuming for each soldier a rate of outcome that varies with deployment. To this end, we will use both discrete time failure models as well as a survival model with time varying covariates. We shall employ a random effects failure analysis, treating the unit as a random effect to consider variation across units in these rates of outcome. These models will be modified (via use of Poisson models) to handle repeated instances of intra-familial violence and thus to account for the potential that episodes of violence can recur. In these models we will be accounting for time-varying confounders using marginal structure models. We also will estimate the effect of the history of deployment status on mental health events by including functions of deployment status history in the proportional hazards models. Thus, we will allow the rates of events to be a function not only of current deployment status but also of deployment histories (e.g., length of time in current status, and recency of deployment and length of that deployment). Thus, we should be able to estimate jointly the effects of recent and earlier deployment status on mental health events. In the modeling, we will need to control for confounding upon the effect of deployment status on mental health events. Status will include mental health events as well as the various specific conditions, such as PTSD, depression, anxiety, substance use, and traumatic brain injury.

The above analyses are targeting the total effect of deployment on family events. We also will be striving to assess the effect of diagnosis of mental health problems as a link between deployment and family violence outcomes, and in so doing to estimate the direct effects of deployment on outcome, and the indirect effects of deployment on outcome mediated by its effect on mental health state. We will be testing the hypothesis that this total effect consists of a direct effect of deployment on outcome as well as an indirect effect through mental health status.

### **SECTION III - PROBLEM AREAS**

- (a) A description of current and recent problems that may impede performance along with

actions being taken to resolve them:

Currently, the biggest challenge is working with the records of dependents we have acquired from DMDC. More specifically, many dependents have different social security numbers and different dates of birth at different points in time. Our team is working to establish a set of rules that will allow us to treat these records as single individuals while still allowing for accurate linkage with the FAP and TMA data. This is a time-consuming process and is our biggest impediment to completing the de-identification process. We are working to resolve this issue through intensive data management by our programmers and consultation with MAJ Frioux and other team members.

Another problem we encountered in the past couple of months is receiving data from DMDC and PASBA multiple times due to errors in the initial data extracts. For example, an initial data extract from DMDC resulted in only receiving UIC/MOS information on 10% of our cohort. To resolve this issue we engaged in discussions with Mr. Colin Rogers. Similarly for PASBA, we received a smaller percentage of our cohort in the medical claims data than we expected. We realized this problem was related to the dependents' SSNs and how they were being linked to TMA data. To address this issue, we concluded that TMA records would be linked by the soldiers' SSNs, which were much more reliable in our DMDC dataset.

- (b) A description of anticipated problems that have a potential to impede progress and what corrective action is planned should the problem materialize:

The most immediate problem we anticipate encountering is delay in reaching our time-specific goals due to data acquisition setbacks during the previous quarter. We originally expected to receive the DMDC data well in advance of acquisition of FAP and PASBA data, which would allow time to clean and de-identify this data first. However, with multiple data extracts required from DMDC, we have now received updated data from all 3 providers within a short period of time. Furthermore, while the data remains identifiable, it can only be accessed by our programmer on the standalone computer until it is de-identified. To address this, our programmer has been intensively cleaning the dependent data in order to finish the de-identification process. Once this is completed, we have a number of team members in place that can take on data analysis, both descriptive and inferential. This solution will allow us to remain relatively on schedule. In conjunction with our weekly data meetings, we will be able to establish short-term goals and divide the tasks among various team members. This will hold our team accountable and remain on track with the time schedule established.

#### **SECTION IV - DESCRIPTION OF WORK TO BE PERFORMED DURING THE NEXT REPORTING PERIOD.**

<b>1st Quarter Year 3 Goals (from SOW)</b>	<b>Status</b>
Data acquisition	Complete
De-identification of data and generation of	In process;

crosswalk file	
Prepare data: Merge files, impute missing data, create variables for working dataset	In process; cleaning final DMDC dataset, cleaning soldier-level UIC/MOS records; establishing longitudinal dataset and family dyad relationships;
Primary analysis (Y1Q2-Y3Q2)	In process; formal statistical analysis plan established; weekly goal-oriented statistical meetings;
Develop partnerships with key community stakeholders (Y1Q1-Y4Q4)	In process; continue to identify community partners to provide content expertise on this project.

#### **SECTION V - ADMINISTRATIVE COMMENTS (OPTIONAL)**

None.

Quarterly Technical Progress Reports shall be submitted to the following e-mail addresses within 10 days of the end of the report quarter. Please incorporate in the Subject Line of the e-mail the USAMRAA Grant/Cooperative award number associated with this award. The Quarterly Technical Progress Report shall be emailed to the following addresses:

Email: janet.kuhns@us.army.mil

Email: mark.clayton2@amedd.army.mil

### **Appendix I: PTSD Definitions**

- a. **PTSD diagnosis (309.81):** from Armed Forces Health Surveillance Center (AFHSC) PTSD Definitions as stated in their July 2012 release:

Either 1 or 2:

1. *One inpatient medical encounter* with the defining diagnosis of PTSD in *any* diagnostic position
2. *Two outpatient medical encounters*, occurring on separate days, with the defining diagnosis of PTSD in *any* diagnostic position (There is *no date restriction*, i.e., a restriction on the length of the time interval between the two outpatient medical encounters)

- b. **Very Likely PTSD:** must have 1+ prior deployment and at least one of the following:

1. Taking Prazosin
2. Nightmare disorder diagnosis (307.47 nightmare disorder)
3. *One outpatient medical encounter* with the defining diagnosis of PTSD in *any* diagnostic position

- c. **Likely posttraumatic stress:** must have 1+ prior deployment and at least one of the following:

1. Acute stress reaction diagnosis (308.0, 308.1, 308.2, 308.3, 308.4, 308.9) PLUS another visit within 6 months with SSRI or SSRI+ Quetiapine prescription
  - a. This may also capture soldiers with posttraumatic depression
2. Adjustment disorder diagnosis (309.0, 309.1, 309.24, 309.28, 309.3, 309.4, 309.82, 309.83, 309.89, 309.9) on two separate medical encounters, occurring on separate days within 6 months
3. Prescriptions of SSRI and/or Quetiapine with a V code, V15.4 (History of psychological trauma) or an E code, E990-E999 (Injury Resulting From Operations Of War)
  - a. This may also capture soldiers with posttraumatic depression
4. Personality disorder diagnosis with V code V15.4 (History of psychological trauma)
  - a. This may also capture soldiers with personality disorders and/or childhood trauma (not necessarily recent trauma)

Title: The Temporal Relationship Between Intrafamilial Violence, Deployment, and Serious Mental Illness in US Army Service Members

PI: Rubin, David M.

Report: Annual Report #2, Year 2, February 18, 2013

Page 13

d. **Possible posttraumatic symptomatology:** must have 1+ prior deployment and at least one of the following:

1. V code V15.4 (History of psychological trauma) plus any MH diagnosis or other V code or psychotropic meds
2. Adjustment disorder diagnosis
3. Acute stress reaction diagnosis
4. Depressive diagnosis with or without SSRIs, Quetiapine

## **Appendix II: Final medications list**

1. Any psychoactive medication
  - a. Lifetime - ever prescribed
  - b. Current - current prescription
2. Psychiatric Treatment Medications
  - a. Antidepressants

### COMBO. ANTI-DEPRESSANTS

- AMITRIPTYLINE HCL/CHLORDIAZEPOXIDE (LIMBITROL)
- AMITRIPTYLINE HCL/PERPHENAZINE (TRIAVIL, ETRAFON)

### TCA ANTIDEPRESSANTS

- AMITRIPTYLINE HCL (AMITRIL, ELAVIL, TRYPTANOL, ENDEP)
- AMOXAPINE (ASENDIN)
- CLOMIPRAMINE HCL (ANAFRANIL)
- DESIPRAMINE HCL (PERTOFRANE, NORPRAMIN)
- DOXEPIN (SINEQUAN, ADAPIN)
- IMIPRAMINE (SK-PRAMINE, PRESAMINE, JANIMINE, TOFRANIL)
- MAPROTILINE HCL (LUDIOMIL)
- NORTRIPTYLINE (AVENTYL, PAMELOR)
- PROTRIPTYLINE HCL (VIVACTIL)
- TRIMIPRAMINE MALEATE (SURMONTIL)

### SSRI ANTIDEPRESSANTS

- FLUOXETINE HCL (PROZAC)
- FLUVOXAMINE (LUVOX)
- PAROXETINE (PAXIL)
- SERTRALINE (ZOLOFT)
- CITALOPRAM (CELEXA)
- ESCITALOPRAM (LEXAPRO)

### MAOI ANTIDEPRESSANTS

- PHENELZINE SULFATE (NARDIL)
- TRANYLCPROMINE SULFATE (PARNATE)
- ISOCARBOXAZID (MARPLAN)

### SNRI ANTIDEPRESSANTS

- VENLAFAXINE (EFFEXOR)
- DESVENLAFAXINE (PRISTIQ)
- DULOXETINE (CYMBALTA)

### OTHER ANTIDEPRESSANTS

- TRAZODONE (DESYREL)
- NEFAZODONE (SERZONE)

- BUPROPION (WELLBUTRIN)
- MIRTAZAPINE (REMERON)

b. Mood stabilizers

MOOD STABILIZING ANTICONVULSANTS

- CARBAMAZEPINE (EPITOL, TEGRETOL, CARBATROL)
- VALPROIC ACID/VALPROATE (DEPAKENE, DEPAKOTE)
- LAMOTRIGINE (LAMICTAL)
- GABAPENTIN (NEURONTIN)
- OXCARBAZEPINE (TRILEPTAL)

ANTIMANIC AGENTS

- LITHIUM CARBONATE/LITHIUM CITRATE (CIALITH-S, ESKALITH, LITHONATE, LITHANE, LITHOBID, LITHOTABS)

c. Antipsychotics

ANTIPSYCHOTICS

- CHLORPROMAZINE (THORAZINE)
- CHLORPROTHIXENE (TARACTAN)
- CLOZAPINE (CLOZARIL)
- FLUPHENAZINE/FLUPHENZINE DECANOATE/FLUPHENZINE ENANTHATE (PERMITIL, PROLIXIN)
- HALOPERIDOL/HALOPERIDOL DECANOATE/HALOPERIDOL LACTATE (HALDOL)
- LOXAPINE HCL/ LOXAPINE SUCCINATE (LOXITANE)
- MESORIDAZINE (SERENTIL)
- MOLINDONE (MOBAN)
- OLANZAPINE (ZYPREXA)
- QUETIAPINE (SEROQUEL)
- PERPHENAZINE (TRILAFON)
- PIMOZIDE (ORAP)
- RISPERIDONE (RISPERDAL)
- THIORIDAZINE (MELLARIL, SK-THIORIDAZINE)
- THIOTHIXENE (NAVANE)
- TRIFLUOPERAZINE (STELAZINE, VESPRIN)
- DROPERIDOL (INAPSINE)
- PROMAZINE (SPARINE)
- ACETOPHENAZINE (TINDAL)
- ARIPIPRAZOLE (ABILIFY)
- ASENAPINE (SAPHRIS)
- ILOPERIDONE (FANAPT)
- PALIPERIDONE (INVEGA)

d. Sedative/hypnotics

ANXIOLYTIC BENZODIAZEPINES



- ALPRAZOLAM (XANAX)
- CHLORIDIAZEPOXIDE (SK-LYGEN, A-POXIDE, LIBRIUM, LIBRITABS, LIBRAX)
- CLORAZEPATE (TRANXENE)
- DIAZEPAM (VALIUM, VALRELEASE, CIV VALIUM, DIASTAT)
- LORAZEPAM (ATIVAN)
- OXAZEPAM (SERAX)
- PRAZEPAM (CENTRAX)
- VERSED
- CLONAZEPAM (KLONOPIN)

#### OTHER ANXIOLYTICS

- BUSPIRONE (BUSPAR)

#### HYPNOTIC BENZODIAZEPINES

- FLURAZEPAM (DALMANE)
- TRIAZOLAM (HALCION)
- TEMAZEPAM (RESTORIL)
- QUAZEPAM (DORAL)
- ESTAZOLAM (PROSOM)

#### e. Psycho-stimulants

##### STIMULANTS

- AMPHETAMINE/DEXTROAMPHETAMINE (ADDERALL, DEXEDRINE, DEXTROSTAT, LISDEXAMFETAMINE, VYNASE)
  - o (all variations of amphetamine/d-amphetamine; it would be worth checking with a military physician to see how/if amphetamine is prescribed)
- METHYLPHENIDATE (RITALIN)
- ATOMOXETINE (STRATTERA)

#### f. Sleep medications/sleep aides

##### OTHER HYPNOTICS

- ZOLPIDEM (AMBIEN)
- ZALEPLON (SONATA)
- CHLORAL HYDRATE
- LUNESTA (ESZOPICLONE)

#### g. Prazosin

- PRAZOSIN HCL (MINIPRESS)

#### h. Other relevant Medications: Pain medications

##### OPIOIDS

- CODEINE
- FENTANYL (DURAGESIC)

- HYDROCODONE
- HYDROMORPHONE (Dilaudid)
- LEVORPHANOL (LEVO-DROMORAN)
- MEPERIDINE (DEMEROL)
- METHADONE (DOLOPHINE)
- MORPHINE (MS CONTIN, ORAMORPH SR)
- OXYCODONE (OXYCONTIN)
- OXYMORPHONE (NUMORPHAN)
- PROPOXYPHENE (DARVON)
- TRAMADOL (ULTRAM)

#### ANTI SEIZURE MEDICATION (USED FOR CHRONIC PAIN)

- PHENYTOIN (DILANTIN)

#### NSAIDS

- ASPIRIN
- IBUPROFEN (MOTRIN)
- NAPROXEN SODIUM (ALEVE)
- DICLOFENAC POTASSIUM (CATAFLAM)
- DICLOFENAC SODIUM (VOLTAREN)
- ETODOLAC (LODINE)
- FLURBIPROFEN (ANSAID)
- INDOMETHACIN (INDOCIN)
- KETOROLAC (TORADOL, ACULAR)
- NABUMETONE (RELAFEN)
- NAPROXEN (ANAPROX, NAPRELAN, NAPROSYN)
- OXAPROZIN (DAYPRO)
- PIROXICAM (FELDENE)
- SULINDAC (CLINORIL)

#### COX-2 INHIBITORS

- CELECOXIB (CELEBREX)
- ROFECOXIB (VIOXX)- marketed from 1999-2004; recalled in shame by drug company
- VALDECOXIB (Bextra)- only marketed from 2004-2005; recalled in shame by drug company

Antidepressants also often used for chronic pain:

- AMITRIPTYLINE HCL/CHLORDIAZEPOXIDE (LIMBITROL)
- AMITRIPTYLINE HCL/PERPHENAZINE (TRIAVIL, ETRAFON)
- DESIPRAMINE HCL (PERTOFRANE, NORPRAMIN)
- VENLAFAXINE (EFFEXOR)
- DULOXETINE (CYMBALTA)

#### 3. Medications known to increase violent behavior

- VARENICLINE (CHANTIX)

Title: The Temporal Relationship Between Intrafamilial Violence, Deployment, and Serious Mental Illness  
in US Army Service Members

PI: Rubin, David M.

Report: Annual Report #2, Year 2, February 18, 2013

Page 18

- INTERFERON ALFA (used in treating hepatitis)
- SODIUM OXYBATE (used in treating narcolepsy)

4. Medications used to treat substance abuse

Alcoholism:

- NALTREXONE
- DISULFIRAM (ANTABUSE)
- ACAMPROSATE

Opiate addiction:

- METHADONE
- NALTREXONE
- BUPRENORPHINE/NALOXONE (SUBOXONE)

### **Appendix III: ICD-9 Codes**

#### **Injury Outcomes for Possible Cases of Abuse**

<b>Category</b>	<b>ICD-9 Code Range</b>
Burns	940-949.9
Child Maltreatment	995.5
Crush Injury	925-929.9
Dislocations, Strains, and Sprains	830-848.9
External Cause	990-994.9
Foreign Body	930-939.9
Fracture Lower Limb	820-827.9, 829-829.9
Fracture Neck and Trunk	805-809.9
Fracture Skull (apart from vault/base)	802-804.9
Fracture Skull Vault/Base	800-801.9
Fracture Upper Limb	810-818.9
Insect Stings	910.4, 910.5, 911.4, 911.5, 912.4, 912.5, 913.4, 913.5, 914.4, 914.5, 915.4, 915.5, 916.4, 916.5, 917.4, 917.5, 918.4, 918.5, 919.4, 919.5
Internal Trauma	855-869.1
Intracranial Injury	850-854.1
Multiple Fractures of Limbs	819-819.1, 828-828.1
Nerve and Spinal Cord	950-957.9
Open Wounds	870-897.9
Poisoning	960-989.9
Superficial Injuries and Contusion (apart from insect stings)	910-924.9, Exclude "Insect Stings"
Unspecified Injury (All body regions)	959-959.9
Vascular Injury	900-904.9

### **Traumatic Brain Injury (TBI)**

Department of Defense ICD-9 Coding Guidance for Traumatic Brain Injury. Updated September, 2010.

#### **Initial TBI Encounter Coding Example:**

A service member is seen for the first time at a military treatment facility for complaints of memory problems several weeks after returning home from deployment. The patient reports that he was part of a convoy that was hit by an improvised explosive device blast and while he didn't sustain any physical injuries, he reports that he was unconscious for approximately three minutes. The SM reports that he has never sought treatment for his complaint of difficulty remembering things, which is now causing significant difficulty at work. The practitioner ensures documentation that this visit was an initial encounter for TBI as the patient was never seen by any medical staff for the incident he described. The practitioner encodes the initial encounter as:

<b>Primary Diagnosis</b>	850.11	Concussion with LOC of 30 minutes or less
<b>Secondary Diagnoses</b>	V15.52_2	Injury related to global war on terrorism, mild
	780.93	Memory loss, NOS
	V70.5_6	Post-Deployment Encounter
	V80.01	Special Screening for TBI

#### **Summary:**

1. Primary code: brain injury, 8xx
2. Secondary diagnosis: V-code, V15.52\_x
3. Other ICD-9 codes for symptoms (i.e., Tinnitus 388.3)
4. Appropriate deployment status code, V70.5\_x
5. Special screening code for TBI, V80.01

#### **Subsequent TBI Encounter Coding Example**

A service member presents to her provider at a military treatment facility (MTF) after returning home from Iraq complaining of headaches that began shortly after she was exposed to an IED blast two weeks ago. The provider reviews AHLTA notes and finds a note written immediately after the injury documenting the following: a description of the injury event, alteration of consciousness (AOC) of less than five minutes, no reported or observed loss of consciousness, no post-traumatic amnesia, and ICD-9 code 850.0. The provider determines that the present complaint of headache may be related to the previously diagnosed mild TBI.

<b>Primary Diagnoses</b>	784.0	Headache
<b>Secondary Diagnoses</b>	V15.52_2	Injury related to global war on terrorism, mild
	907.0	Late effect of intracranial injury without skull or facial fracture
	V70.5_6	Post Deployment encounter

#### **Summary:**

1. Primary diagnosis: chief complaint
2. Secondary diagnosis: V-code, V15.52\_x
3. Late effect code (905.0 or 907.0)
4. Appropriate deployment status code, V70.5\_x

5. Other ICD-9 codes as appropriate

**TBI Severity Scoring ( Wojick et al.)**

	ICD-9 Codes
Most Severe-Type 1	800, 801, 803, and 804 (plus fourth and fifth digits: 0.03–0.05, 0.1–0.4, 0.53–0.55, 0.6–0.9); 850 (0.2–0.4); 851–854; 950 (0.1–0.3)
Type 2	800, 801, 803, and 804 (plus 0.00, 0.02, 0.06, 0.09, 0.50, 0.52, 0.56, 0.59); 850 (0.0, 0.1, 0.5, 0.9)
Least Severe-Type 3	800, 801, 803, and 804 (plus 0.01, 0.51)

**Head Trauma**

ICD-9 Series Code	Description
800	Fractures of vault of skull
801	Fractures of base of skull
802	Fractures of face bones
803	Other and unqualified skull fractures
804	Multiple fractures involving skull or face
850	Concussion
851	Cerebral laceration and contusion
852	Subarachnoid, subdural and extradural hemorrhage following injury
853	Other or unspecified intracranial hemorrhage following injury
854	Intracranial injury of other and unspecified nature

**PTSD**

309.81	PTSD
--------	------

**Adjustment Disorders**

309.0, 309.1	Brief depressive reaction, prolonged depressive reaction
309.24	Adjustment reaction with anxious mood
309.28	Adjustment reaction with mixed emotional features
309.3	Adjustment reaction with disturbance of conduct
309.4	Adjustment reaction, mixed conduct and emotions
309.82	Adjustment reaction with physical symptoms
309.83	Adjustment reaction with withdrawal
309.89, 309.9	Other/unspecified adjustment reaction
308.0, 308.1, 308.2, 308.3, 308.4, 308.9	Acute Reaction to stress

**Anxiety Disorders**

300.00	Anxiety State- unspecified
300.01	Anxiety Disorder: Panic Disorder

300.02	Generalized Anxiety Disorder
300.09	Other Anxiety States
300.2	Phobic Disorder
300.20	Phobia, unspecified
300.21	Agoraphobia with panic attacks
300.22	Agoraphobia without mention of panic attacks
300.23	Social Phobia
300.29	Other simple phobias
300.3	OCD
Somatoform disorders	
300.5	Neurasthenia
300.7	Hypochondriasis
300.8	Somatoform Disorders
300.81	Somatization Disorder
300.82	Undifferentiated Somatoform Disorders
300.89	Other Somatoform Disorders
300.11	Conversion Disorder
306	Physiological malfunction arising from mental factors
Dissociative disorders	
300.6	Depersonalization Disorder
300.10	Hysteria
300.12	Dissociative (psychogenic) Amnesia
300.13	Dissociative (psychogenic) Fugue
300.14	Dissociative Identity Disorder (multiple personality)
300.15	Dissociative Disorder or reaction, unspecified
Factitious disorders	
300.16	Factitious Disorder with predominantly psychological signs and symptoms
300.19	Other or unspecified factitious illness
General codes:	
300.9	Unspecified Non-psychotic Mental Disorder
290-319	Mental Health Outcome: EXCLUDES 305.10(tobacco)

### **Mood and Depressive Disorders**

311	Mood Disorder/ Depressive Disorder
296.9	Episodic Mood Disorder, unspecified
311	Depressive Disorder, NOS
296.2-296.26, 296.3-296.36	Major Depressive disorder
300.4	Neurotic depression/Dysthymic Disorder

296.00-296.05, 296.10- 296.15, 296.40- 296.45, 296.50-296.55, 296.60-296.65, 296.7, 296.80-296.89, 301.13	Bipolar Disorders
---	-------------------

### **Substance and Alcohol Disorders**

Alcohol	
291.0, 291.3, 291.4, 291.81	Alcohol withdrawal, withdrawal hallucinations, withdrawal psychosis, intoxication
291.1	Alcohol Amnestic syndrome
291.2	Alcoholic dementia
291.3	Alcoholic jealousy, paranoia
291.89, 291.9	Alcoholic psychoses
303.00-303.03, 303.90-303.93	Alcohol Dependence Syndrome
305.0-305.02	Alcohol abuse
Substances	
292	Substance withdrawal/intoxication/psychoses/delirium
dependence:	
304.00-.02	Opioid Type Dependence
304.10-.12	Sedative, Hypnotic, Anxiolytic Dependence
304.20-.22	Cocaine Dependence
304.30-.32	Cannabis Dependence
304.40-.42	Amphetamine, Psychostimulant Dependence
304.50-.52	Hallucinogen Dependence
304.60-.62	Other Specified Drug Dependence
304.70-.72	Combination of opioid with any other - dependence
304.80-.82	Combinations of drug dependence excluding opioids
304.90-.92	Unspecified drug dependence
substance abuse:	
305.20-.22	Cannabis abuse (Non-Dep)
305.30-.32	Hallucinogen abuse (Non-Dep)
305.40-.42	Sedative, hypnotic, anxiolytic abuse (Non-Dep)
305.50-.52	Opioid abuse (non-dep)
305.60-.62	Cocaine abuse (Non-Dep)
305.70-.72	Amphetamine or related acting sympathomimetic abuse (Non-dep)
305.80-.82	Antidepressant type abuse (non-dep)
305.90-.92	Other, mixed, or unspecified drug abuse (non-dep)

### **Psychotic Disorders**

295.0-295.9	Schizophrenic Disorders
298	Other nonorganic psychoses

### **Violence-Related Diagnoses**



312	Conduct Disorder
312.34	Intermittent Explosive Disorder
312.35	Isolated Explosive Disorder

#### **Personality Disorder**

301.0	Paranoid Personality Disorder
301.1, 301.11, 301.12	Affective Personality Disorders
301.2	Schizoid/schizotypal Personality Disorders
301.3	Explosive Personality Disorder
301.4	Obsessive Compulsive Disorder
301.5	Histrionic Personality Disorder
301.6	Dependent personality disorder
301.7	Antisocial personality disorder
301.81	Narcissistic personality disorder
301.82	Avoidant personality disorder
301.83	Borderline personality disorder
301.84	Passive-Aggressive personality
301.9	Unspecified personality disorder

#### **Sleep Disorders**

307.4	Sleep disorders of non-organic origin
307.41, 307.42	Insomnia
327-.00-327.08	Organic Insomnias (includes sleep apnea)
307.47	Nightmare Disorder
780.5	Organic Sleep Disturbance, NOS (includes sleep apnea)

#### **Spinal Cord Injury (SCI)/Vertebral Column Injury (VCI)**

806.0-806.9, 952.0-952.2, 952.3-.4, 952.8-952.9	Spinal Cord Injury, SCI
805.0-805.09, 839.0-839.59, 847.0-847.4	Vertebral Column Injury VCI

#### **Other Series Codes for Symptoms of possible co morbid Conditions**

314	ADD
389.9	Hearing Loss, unspecified
388.3	Tinnitus
780.4	Dizziness, lightheadedness
784.0	Headache
780.93	Memory loss, NOS
438.85	Vertigo
368.8	Blurred vision, NOS
780.7	Malaise and fatigue
787.02	Nausea
368.13	Photophobia

#### **Deployment Status Codes**

V70.5_5	During Deployment Encounter
V70.5_6	Post-Deployment Encounter
V62.21	Current Military Deployment status

#### **TBI Screening Code**

V80.01	Special screening for TBI
310.0	Frontal lobe syndrome
310.1	Organic personality syndrome
310.2	Post-concussion syndrome
310.8, 310.9	Other, unspecified mental disorder following brain damage

#### **TBI Severity Scoring ( Wojick et al.)**

Most Severe-Type 1	800, 801, 803, and 804 (plus fourth and fifth digits: 0.03–0.05, 0.1–0.4, 0.53–0.55, 0.6–0.9); 850 (0.2–0.4); 851–854; 950 (0.1–0.3)
Type 2	800, 801, 803, and 804 (plus 0.00, 0.02, 0.06, 0.09, 0.50, 0.52, 0.56, 0.59); 850 (0.0, 0.1, 0.5, 0.9)
Least Severe-Type 3	800, 801, 803, and 804 (plus 0.01, 0.51)

#### **History of Psych. Trauma**

V15.4	History of Psychological Trauma
-------	---------------------------------

#### **E- Codes**

E950.0 - E950.9	Suicide and self-inflicted poisoning by solid or liquid substances
E951.0-.1, E951.8	Suicide and self-inflicted poisoning by gases in domestic use
E952.0-1, E952.8-9	Suicide and self-inflicted poisoning by other gases and vapors
E953.0-1, E953.8-9	Suicide and self-inflicted injury by hanging, strangulation, and suffocation
E954	Suicide and self-inflicted injury by submersion [drowning]
E955.0-7, E955.9	Suicide and self-inflicted injury by firearms, air guns and explosives
E956	Suicide and self-inflicted injury by cutting and piercing instrument
E957.0-2, E957.9	Suicide and self-inflicted injuries by jumping from high place
E958.0-9	Suicide and self-inflicted injury by other and unspecified means
E959	Late effects of self-inflicted injury
E990	Injury due to war operations by fires and conflagrations
E991	Injury due to war operations by bullets and fragments

E992	Injury due to war operations by explosion of marine weapons
E993	Injury due to war operations by other explosion
E994	Injury due to war operations by destruction of aircraft
E995	Injury due to war operations by other and unspecified forms of conventional warfare
E996	Injury due to war operations by nuclear weapons
E997	Injury due to war operations by other forms of unconventional warfare
E998	Injury due to war operations but occurring after cessation of hostilities
E999	Late effect of injury due to war operations and terrorism

**References:**

Eaton KM, Messer SC, Garvey Wilson AL, Hoge CW. Strengthening the validity of population-based suicide rate comparisons: an illustration using U.S. military and civilian data. *Suicide Life Threat Behav* 2006 Apr;36(2):182-191.

MacGregor AJ, Shaffer RA, Dougherty AL, Galarneau MR, Raman R, Baker DG, et al. Psychological correlates of battle and nonbattle injury among Operation Iraqi Freedom veterans. *Mil Med* 2009 Mar;174(3):224-231.

Shen YC, Arkes J, Williams TV. Effects of Iraq/Afghanistan deployments on major depression and substance use disorder: analysis of active duty personnel in the US military. *Am J Public Health* 2012 Mar;102 Suppl 1:S80-7.

Wojcik BE, Stein CR, Bagg K, Humphrey RJ, Orosco J. Traumatic brain injury hospitalizations of U.S. army soldiers deployed to Afghanistan and Iraq. *Am J Prev Med* 2010 Jan;38(1 Suppl):S108-16.

Department of Defense ICD-9 Coding Guidance for Traumatic Brain Injury Fact Sheet, Version 5.0. Department of Defense, September , 2010.

Military Health System Coding Guidance: Professional Services and Specialty Coding Guidelines, Version 1.0, Unified Biostatistical Utility, 2005 Appendix G: Special Guidance on Traumatic Brain Injury Coding, 2009

American Psychiatric Association. (2000). *Diagnostic and statistical manual of mental disorders: DSM-IV-TR*. Washington, DC: Author.

**NOTE:**

- Presence of an ICD-9 code between 290 and 319 (excluding 305.10) at any time (whilst in the military) since January 1, 2000 and prior to the date of injury was considered a previous mental health diagnosis. (MacGregor, 2009).



# The Temporal Relationship Between Intrafamilial Violence, Deployment and Serious Mental Illness in US Army Service Members 10071010, DHP Core

PI: Rubin      Org: Children's Hospital of Philadelphia Award Amount: \$2,035,962



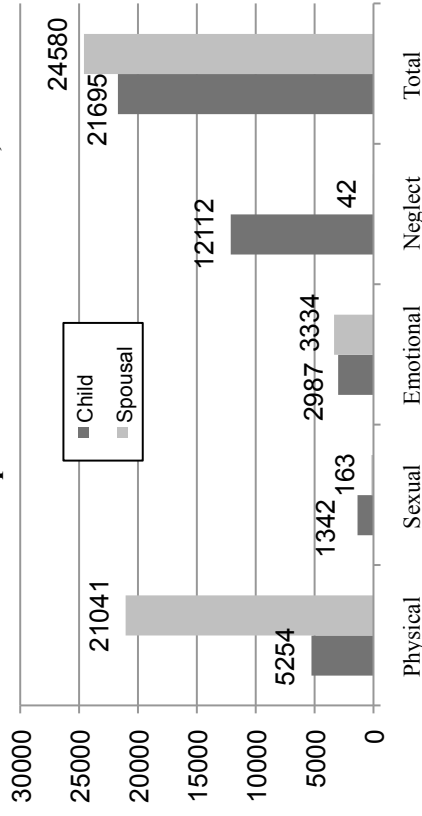
## Study/Product Aim(s)

- To establish the temporal relationship between service member deployment, diagnosis of mental illness in active duty service members, and events of intrafamilial violence.
- To identify specific factors that may modify this relationship, including individual factors (i.e., demographics, ADOS prior health, unit, MOS), family factors (i.e., family size, compositing, family members' prior health history), and deployment factors (i.e. length, frequency, timing between, and role during).
- To gather a rich contextual interpretation of the findings generated in Stage 1 by obtaining feedback from Army stakeholders.
- To solicit recommendations from Army stakeholders that will enhance the successful implementation of future interventions arising from Stage 1.

## Approach

A two-stage mixed methods design. First, an observational analysis (Stage 1) will link personnel and deployment history with healthcare claims data and substantiated reports of spousal and child abuse. Stage 2, a qualitative study where targeted leadership will be asked to reflect on Stage 1 results and provide structured feedback. This mixed methods format offers the best approach to linking quantitative analyses with concrete recommendations developed by Army leadership that will help develop plans for future intervention.

Substantiated Reports of Abuse From FAP, 2000-2007



Key accomplishments during Year 2 include acquisition of data from all of our partners, intensive cleaning of personnel records, enhancing our security standards, and forming key partnerships with Army stakeholders.

## Goals/Milestones

- Stage 1
  - Regulatory Approvals (CHOP, DMDC, ACR, TMA – done,)
  - Access data via data use agreements (DMDC, ACR, TMA–done)
  - Prepare data (DMDC, ACR, TMA–ongoing)
  - Prelim data analysis (DMDC, ACR, TMA—ongoing)
  - Prepare report for Stage 1
- Stage 2
  - Regulatory approvals
  - Review Stage 1 data
  - Conduct interviews
  - Prepare summary report

## Comments/Challenges/Issues/Concerns

- Multiple data extractions and errors in dependent SSN records delayed the team's progress during the previous quarter. However, through intensive data cleaning and partnerships with our data providers, we have overcome these issues and look forward to conducting analyses and sharing our results in the coming months. We anticipate requesting a 12 month extension to complete the goals outlined above and have also discussed with CDR Clayton responding via a new BAA to extend our work to include an analysis of mental health visits for spouses and children to build on the work we are doing.
- Spending is less than expected to data due to 1) a six-month funding suspension to hire personnel and acquire data, 2) delays in data acquisition.

## Budget Expenditure to Date

Projected Expenditure: \$2,035,962 Actual Expenditure: \$600,411.43

## Timeline and Cost

CY	11			12			13			14			15		
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3
Stage 1: Regulatory, access data, prepare data, data analysis															
Stage 1: Write report															
Stage 2: Regulatory, review data, conduct interviews, data analysis															
Stage 2: Write report															
Estimated Budget (\$k)	\$514			\$571			\$560								